



SEQUENCE LISTING

<110> Lawn, Richard M.
Wade, David
Oram, John F.
Garvin, Michael

<120> Compositions and Methods for Increasing Cholesterol
Efflux and Raising HDL using ATP Binding Cassette
Transporter Protein ABC1

<130> 99,395-A

<140> 09/595,526

<141> 2000-06-16

<150> US 60/140,264

<151> 1999-06-18

<150> US 60/153,872

<151> 1999-09-14

<150> US 60/166,573

<151> 1999-11-19

<160> 57

<170> PatentIn Ver. 2.0

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	820	825	830
Phe Leu Tyr Gly Val Met Thr Trp Tyr Ile Glu Ala Val Phe Pro Gly			
	835	840	845
Gln Tyr Gly Ile Pro Arg Pro Trp Tyr Phe Pro Cys Thr Lys Ser Tyr			
	850	855	860

Trp Phe Gly Glu Glu Ser Asp Glu Lys Ser His Pro Gly Ser Asn Gln
865 870 875 880

Lys Arg Met Ser Glu Ile Cys Met Glu Glu Glu Pro Thr His Leu Lys
885 890 895

Leu Gly Val Ser Ile Gln Asn Leu Val Lys Val Tyr Arg Asp Gly Met
900 905 910

Lys Val Ala Val Asp Gly Leu Ala Leu Asn Phe Tyr Glu Gly Gln Ile
915 920 925

Thr Ser Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser
930 935 940

Ile Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Thr Ala Tyr Ile Leu
945 950 955 960

Gly Lys Asp Ile Arg Ser Glu Met Ser Thr Ile Arg Gln Asn Leu Gly
965 970 975

Val Cys Pro Gln His Asn Val Leu Phe Asp Met Leu Thr Val Glu Glu
980 985 990

His Ile Trp Phe Tyr Ala Arg Leu Lys Gly Leu Ser Glu Lys His Val
995 1000 1005

Lys Ala Glu Met Glu Gln Met Ala Leu Asp Val Gly Leu Pro Ser Ser
1010 1015 1020

Lys Leu Lys Ser Lys Thr Ser Gln Leu Ser Gly Gly Met Gln Arg Lys
1025 1030 1035 1040

Leu Ser Val Ala Leu Ala Phe Val Gly Gly Ser Lys Val Val Ile Leu
1045 1050 1055

Asp Glu Pro Thr Ala Gly Val Asp Pro Tyr Ser Arg Arg Gly Ile Trp
1060 1065 1070

Glu Leu Leu Leu Lys Tyr Arg Gln Gly Arg Thr Ile Ile Leu Ser Thr
1075 1080 1085

His His Met Asp Glu Ala Asp Val Leu Gly Asp Arg Ile Ala Ile Ile
1090 1095 1100

Ser His Gly Lys Leu Cys Cys Val Gly Ser Ser Leu Phe Leu Lys Asn
1105 1110 1115 1120

Gln Leu Gly Thr Gly Tyr Tyr Leu Thr Leu Val Lys Lys Asp Val Glu			
1125	1130	1135	
Ser Ser Leu Ser Ser Cys Arg Asn Ser Ser Ser Thr Val Ser Tyr Leu			
1140	1145	1150	
Lys Lys Glu Asp Ser Val Ser Gln Ser Ser Ser Asp Ala Gly Leu Gly			
1155	1160	1165	
Ser Asp His Glu Ser Asp Thr Leu Thr Ile Asp Val Ser Ala Ile Ser			
1170	1175	1180	
Asn Leu Ile Arg Lys His Val Ser Glu Ala Arg Leu Val Glu Asp Ile			
1185	1190	1195	1200
Gly His Glu Leu Thr Tyr Val Leu Pro Tyr Glu Ala Ala Lys Glu Gly			
1205	1210	1215	
Ala Phe Val Glu Leu Phe His Glu Ile Asp Asp Arg Leu Ser Asp Leu			
1220	1225	1230	
Gly Ile Ser Ser Tyr Gly Ile Ser Glu Thr Thr Leu Glu Glu Ile Phe			
1235	1240	1245	
Leu Lys Val Ala Glu Glu Ser Gly Val Asp Ala Glu Thr Ser Asp Gly			
1250	1255	1260	
Thr Leu Pro Ala Arg Arg Asn Arg Arg Ala Phe Gly Asp Lys Gln Ser			
1265	1270	1275	1280
Cys Leu Arg Pro Phe Thr Glu Asp Asp Ala Ala Asp Pro Asn Asp Ser			
1285	1290	1295	
Asp Ile Asp Pro Glu Ser Arg Glu Thr Asp Leu Leu Ser Gly Met Asp			
1300	1305	1310	
Gly Lys Gly Ser Tyr Gln Val Lys Gly Trp Lys Leu Thr Gln Gln Gln			
1315	1320	1325	
Phe Val Ala Leu Leu Trp Lys Arg Leu Leu Ile Ala Arg Arg Ser Arg			
1330	1335	1340	
Lys Gly Phe Phe Ala Gln Ile Val Leu Pro Ala Val Phe Val Cys Ile			
1345	1350	1355	1360
Ala Leu Val Phe Ser Leu Ile Val Pro Pro Phe Gly Lys Tyr Pro Ser			
1365	1370	1375	

Leu Glu Leu Gln Pro Trp Met Tyr Asn Glu Gln Tyr Thr Phe Val Ser			
1380	1385	1390	
Asn Asp Ala Pro Glu Asp Thr Gly Thr Leu Glu Leu Leu Asn Ala Leu			
1395	1400	1405	
Thr Lys Asp Pro Gly Phe Gly Thr Arg Cys Met Glu Gly Asn Pro Ile			
1410	1415	1420	
Pro Asp Thr Pro Cys Gln Ala Gly Glu Glu Glu Trp Thr Thr Ala Pro			
1425	1430	1435	1440
Val Pro Gln Thr Ile Met Asp Leu Phe Gln Asn Gly Asn Trp Thr Met			
1445	1450	1455	
Gln Asn Pro Ser Pro Ala Cys Gln Cys Ser Ser Asp Lys Ile Lys Lys			
1460	1465	1470	
Met Leu Pro Val Cys Pro Pro Gly Ala Gly Gly Leu Pro Pro Pro Gln			
1475	1480	1485	
Arg Lys Gln Asn Thr Ala Asp Ile Leu Gln Asp Leu Thr Gly Arg Asn			
1490	1495	1500	
Ile Ser Asp Tyr Leu Val Lys Thr Tyr Val Gln Ile Ile Ala Lys Ser			
1505	1510	1515	1520
Leu Lys Asn Lys Ile Trp Val Asn Glu Phe Arg Tyr Gly Gly Phe Ser			
1525	1530	1535	
Leu Gly Val Ser Asn Thr Gln Ala Leu Pro Pro Ser Gln Glu Val Asn			
1540	1545	1550	
Asp Ala Ile Lys Gln Met Lys Lys His Leu Lys Leu Ala Lys Asp Ser			
1555	1560	1565	
Ser Ala Asp Arg Phe Leu Asn Ser Leu Gly Arg Phe Met Thr Gly Leu			
1570	1575	1580	
Asp Thr Arg Asn Asn Val Lys Val Trp Phe Asn Asn Lys Gly Trp His			
1585	1590	1595	1600
Ala Ile Ser Ser Phe Leu Asn Val Ile Asn Asn Ala Ile Leu Arg Ala			
1605	1610	1615	
Asn Leu Gln Lys Gly Glu Asn Pro Ser His Tyr Gly Ile Thr Ala Phe			
1620	1625	1630	

Asn His Pro Leu Asn Leu Thr Lys Gln Gln Leu Ser Glu Val Ala Leu	1635	1640	1645
Met Thr Thr Ser Val Asp Val Leu Val Ser Ile Cys Val Ile Phe Ala	1650	1655	1660
Met Ser Phe Val Pro Ala Ser Phe Val Val Phe Leu Ile Gln Glu Arg	1665	1670	1675 1680
Val Ser Lys Ala Lys His Leu Gln Phe Ile Ser Gly Val Lys Pro Val	1685	1690	1695
Ile Tyr Trp Leu Ser Asn Phe Val Trp Asp Met Cys Asn Tyr Val Val	1700	1705	1710
Pro Ala Thr Leu Val Ile Ile Ile Phe Ile Cys Phe Gln Gln Lys Ser	1715	1720	1725
Tyr Val Ser Ser Thr Asn Leu Pro Val Leu Ala Leu Leu Leu Leu	1730	1735	1740
Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe Val Phe	1745	1750	1755 1760
Lys Ile Pro Ser Thr Ala Tyr Val Val Leu Thr Ser Val Asn Leu Phe	1765	1770	1775
Ile Gly Ile Asn Gly Ser Val Ala Thr Phe Val Leu Glu Leu Phe Thr	1780	1785	1790
Asp Asn Lys Leu Asn Asn Ile Asn Asp Ile Leu Lys Ser Val Phe Leu	1795	1800	1805
Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile Asp Met Val Lys	1810	1815	1820
Asn Gln Ala Met Ala Asp Ala Leu Glu Arg Phe Gly Glu Asn Arg Phe	1825	1830	1835 1840
Val Ser Pro Leu Ser Trp Asp Leu Val Gly Arg Asn Leu Phe Ala Met	1845	1850	1855
Ala Val Glu Gly Val Val Phe Phe Leu Ile Thr Val Leu Ile Gln Tyr	1860	1865	1870
Arg Phe Phe Ile Arg Pro Arg Pro Val Asn Ala Lys Leu Ser Pro Leu	1875	1880	1885

Asn Asp Glu Asp Glu Asp Val Arg Arg Glu Arg Gln Arg Ile Leu Asp			
1890	1895	1900	
Gly Gly Gly Gln Asn Asp Ile Leu Glu Ile Lys Glu Leu Thr Lys Ile			
1905	1910	1915	1920
Tyr Arg Arg Lys Arg Lys Pro Ala Val Asp Arg Ile Cys Val Gly Ile			
	1925	1930	1935
Pro Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys			
	1940	1945	1950
Ser Ser Thr Phe Lys Met Leu Thr Gly Asp Thr Thr Val Thr Arg Gly			
	1955	1960	1965
Asp Ala Phe Leu Asn Lys Asn Ser Ile Leu Ser Asn Ile His Glu Val			
	1970	1975	1980
His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala Ile Thr Glu Leu			
1985	1990	1995	2000
Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu Leu Arg Gly Val			
	2005	2010	2015
Pro Glu Lys Glu Val Gly Lys Val Gly Glu Trp Ala Ile Arg Lys Leu			
	2020	2025	2030
Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Gly Asn Tyr Ser Gly Gly			
	2035	2040	2045
Asn Lys Arg Lys Leu Ser Thr Ala Met Ala Leu Ile Gly Gly Pro Pro			
	2050	2055	2060
Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg			
2065	2070	2075	2080
Arg Phe Leu Trp Asn Cys Ala Leu Ser Val Val Lys Glu Gly Arg Ser			
	2085	2090	2095
Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr			
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Arg Met Ala Ile Met Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Val			
	2115	2120	2125
Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Thr Ile Val Val Arg			
	2130	2135	2140

Ile Ala Gly Ser Asn Pro Asp Leu Lys Pro Val Gln Asp Phe Phe Gly
 2145 2150 2155 2160

Leu Ala Phe Pro Gly Ser Val Leu Lys Glu Lys His Arg Asn Met Leu
 2165 2170 2175

Gln Tyr Gln Leu Pro Ser Ser Leu Ser Ser Leu Ala Arg Ile Phe Ser
 2180 2185 2190

Ile Leu Ser Gln Ser Lys Lys Arg Leu His Ile Glu Asp Tyr Ser Val
 2195 2200 2205

Ser Gln Thr Thr Leu Asp Gln Val Phe Val Asn Phe Ala Lys Asp Gln
 2210 2215 2220

Ser Asp Asp Asp His Leu Lys Asp Leu Ser Leu His Lys Asn Gln Thr
 2225 2230 2235 2240

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 2245 2250 2255

Lys Glu Ser Tyr Val
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<211> 1643

<212> DNA

<213> Homo sapiens

<400> 3

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1643

<210> 4

<211> 748

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (1)..(748)

<223> All n's are unknown.

<400> 4

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gaatttagtt ttttacctat acctatgtga aactctatta tggaacccaa tggacatatg 660
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748

<210> 5

<211> 2011

<212> DNA

<213> Homo sapiens

<400> 5

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tactgtactg atactattca atgcaatgca attcaatgca atgaaaacaa aattccatta 180
caggggcaag tgcttttgta gcccatgtct tgtatggctc tcaagtgaag gacttgaatt 240
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<210> 6

<211> 3366

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (1)..(3366)

<223> All n's are unknown.

<400> 6

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aaaaaa 3366

<210> 7

<211> 10474

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (1)..(10474)

<223> All n's are unknown.

<400> 7

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Tyr Glu Gln His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala
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Gly Thr Leu Pro Trp Val Gln Gly Ile Ile Cys Asn Ala Asn Asn Pro
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195 200 205

Gln Glu Val Ser Glu Leu Cys Gly Leu Pro Lys Glu Lys Leu Ala Ala
210 215 220

Ala Glu Arg Val Leu Arg Ser Asn Met Asp Ile Leu Lys Pro Ile Leu
225 230 235 240

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Ala Thr Lys Thr Leu Leu His Ser Leu Gly Thr Leu Ala Gln Glu Leu	260	265	270
Phe Ser Met Arg Ser Trp Ser Asp Met Arg Gln Glu Val Met Phe Leu	275	280	285
Thr Asn Val Asn Ser Ser Ser Ser Ser Thr Gln Ile Tyr Gln Ala Val	290	295	300
Ser Arg Ile Val Cys Gly His Pro Glu Gly Gly Gly Leu Lys Ile Lys	305	310	315
Ser Leu Asn Trp Tyr Glu Asp Asn Asn Tyr Lys Ala Leu Phe Gly Gly	325	330	335
Asn Gly Thr Glu Glu Asp Ala Glu Thr Phe Tyr Asp Asn Ser Thr Thr	340	345	350
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Arg Ile Ile Trp Lys Ala Leu Lys Pro Leu Leu Val Gly Lys Ile Leu	370	375	380
Tyr Thr Pro Asp Thr Pro Ala Thr Arg Gln Val Met Ala Glu Val Asn	385	390	395
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Glu Glu Leu Ser Pro Lys Ile Trp Thr Phe Met Glu Asn Ser Gln Glu	420	425	430
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Gly His Glu Leu Thr Tyr Val Leu Pro Tyr Glu Ala Ala Lys Glu Gly
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Ala Phe Val Glu Leu Phe His Glu Ile Asp Asp Arg Leu Ser Asp Leu
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Leu Lys Val Ala Glu Glu Ser Gly Val Asp Ala Glu Thr Ser Asp Gly
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Asp Ile Asp Pro Glu Ser Arg Glu Thr Asp Leu Leu Ser Gly Met Asp			
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Gly Lys Gly Ser Tyr Gln Val Lys Gly Trp Lys Leu Thr Gln Gln Gln			
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Phe Val Ala Leu Leu Trp Lys Arg Leu Leu Ile Ala Arg Arg Ser Arg			
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Lys Gly Phe Phe Ala Gln Ile Val Leu Pro Ala Val Phe Val Cys Ile			
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Ala Leu Val Phe Ser Leu Ile Val Pro Pro Phe Gly Lys Tyr Pro Ser			
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Pro Asp Thr Pro Cys Gln Ala Gly Glu Glu Glu Trp Thr Thr Ala Pro			
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Val Pro Gln Thr Ile Met Asp Leu Phe Gln Asn Gly Asn Trp Thr Met			
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Gln Asn Pro Ser Pro Ala Cys Gln Cys Ser Ser Asp Lys Ile Lys Lys			
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Met Leu Pro Val Cys Pro Pro Gly Ala Gly Gly Leu Pro Pro Pro Gln			
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Arg Lys Gln Asn Thr Ala Asp Ile Leu Gln Asp Leu Thr Gly Arg Asn			
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Leu Gly Val Ser Asn Thr Gln Ala Leu Pro Pro Ser Gln Glu Val Asn			
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Ser Ala Asp Arg Phe Leu Asn Ser Leu Gly Arg Phe Met Thr Gly Leu			
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ttcatctctt caatcactag tcaagaaaaa tataaaaaa acaataactt ccatatggag 8820
catttttcag agttttctaa cccagtctta tttttctagt cagtaaactt ttgtaaaaat 8880
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<210> 10

<211> 2261

<212> PRT

<213> Homo sapiens

<400> 10

Met	Ala	Cys	Trp	Pro	Gln	Leu	Arg	Leu	Leu	Leu	Trp	Lys	Asn	Leu	Thr	1	5	10	15
Phe	Arg	Arg	Arg	Gln	Thr	Cys	Gln	Leu	Leu	Leu	Glu	Val	Ala	Trp	Pro	20	25	30	
Leu	Phe	Ile	Phe	Leu	Ile	Leu	Ile	Ser	Val	Arg	Leu	Ser	Tyr	Pro	Pro	35	40	45	
Tyr	Glu	Gln	His	Glu	Cys	His	Phe	Pro	Asn	Lys	Ala	Met	Pro	Ser	Ala	50	55	60	
Gly	Thr	Leu	Pro	Trp	Val	Gln	Gly	Ile	Ile	Cys	Asn	Ala	Asn	Asn	Pro	65	70	75	80
Cys	Phe	Arg	Tyr	Pro	Thr	Pro	Gly	Glu	Ala	Pro	Gly	Val	Val	Gly	Asn	85	90	95	
Phe	Asn	Lys	Ser	Ile	Val	Ala	Arg	Leu	Phe	Ser	Asp	Ala	Arg	Arg	Leu	100	105	110	
Leu	Leu	Tyr	Ser	Gln	Lys	Asp	Thr	Ser	Met	Lys	Asp	Met	Arg	Lys	Val	115	120	125	
Leu	Arg	Thr	Leu	Gln	Gln	Ile	Lys	Lys	Ser	Ser	Ser	Asn	Leu	Lys	Leu	130	135	140	
Gln	Asp	Phe	Leu	Val	Asp	Asn	Glu	Thr	Phe	Ser	Gly	Phe	Leu	Tyr	His	145	150	155	160
Asn	Leu	Ser	Leu	Pro	Lys	Ser	Thr	Val	Asp	Lys	Met	Leu	Arg	Ala	Asp	165	170	175	
Val	Ile	Leu	His	Lys	Val	Phe	Leu	Gln	Gly	Tyr	Gln	Leu	His	Leu	Thr	180	185	190	
Ser	Leu	Cys	Asn	Gly	Ser	Lys	Ser	Glu	Glu	Met	Ile	Gln	Leu	Gly	Asp	195	200	205	
Gln	Glu	Val	Ser	Glu	Leu	Cys	Gly	Leu	Pro	Lys	Glu	Lys	Leu	Ala	Ala	210	215	220	
Ala	Glu	Arg	Val	Leu	Arg	Ser	Asn	Met	Asp	Ile	Leu	Lys	Pro	Ile	Leu	225	230	235	240
Arg	Thr	Leu	Asn	Ser	Thr	Ser	Pro	Phe	Pro	Ser	Lys	Glu	Leu	Ala	Glu	245	250	255	

Ala Thr Lys Thr Leu Leu His Ser Leu Gly Thr Leu Ala Gln Glu Leu	260	265	270
Phe Ser Met Arg Ser Trp Ser Asp Met Arg Gln Glu Val Met Phe Leu	275	280	285
Thr Asn Val Asn Ser Ser Ser Ser Thr Gln Ile Tyr Gln Ala Val	290	295	300
Ser Arg Ile Val Cys Gly His Pro Glu Gly Gly Gly Leu Lys Ile Lys	305	310	315 320
Ser Leu Asn Trp Tyr Glu Asp Asn Asn Tyr Lys Ala Leu Phe Gly Gly	325	330	335
Asn Gly Thr Glu Glu Asp Ala Glu Thr Phe Tyr Asp Asn Ser Thr Thr	340	345	350
Pro Tyr Cys Asn Asp Leu Met Lys Asn Leu Glu Ser Ser Pro Leu Ser	355	360	365
Arg Ile Ile Trp Lys Ala Leu Lys Pro Leu Leu Val Gly Lys Ile Leu	370	375	380
Tyr Thr Pro Asp Thr Pro Ala Thr Arg Gln Val Met Ala Glu Val Asn	385	390	395 400
Lys Thr Phe Gln Glu Leu Ala Val Phe His Asp Leu Glu Gly Met Trp	405	410	415
Glu Glu Leu Ser Pro Lys Ile Trp Thr Phe Met Glu Asn Ser Gln Glu	420	425	430
Met Asp Leu Val Arg Met Leu Leu Asp Ser Arg Asp Asn Asp His Phe	435	440	445
Trp Glu Gln Gln Leu Asp Gly Leu Asp Trp Thr Ala Gln Asp Ile Val	450	455	460
Ala Phe Leu Ala Lys His Pro Glu Asp Val Gln Ser Ser Asn Gly Ser	465	470	475 480
Val Tyr Thr Trp Arg Glu Ala Phe Asn Glu Thr Asn Gln Ala Ile Arg	485	490	495
Thr Ile Ser Arg Phe Met Glu Cys Val Asn Leu Asn Lys Leu Glu Pro	500	505	510

Ile Ala Thr Glu Val Trp Leu Ile Asn Lys Ser Met Glu Leu Leu Asp			
515	520	525	
Glu Arg Lys Phe Trp Ala Gly Ile Val Phe Thr Gly Ile Thr Pro Gly			
530	535	540	
Ser Ile Glu Leu Pro His His Val Lys Tyr Lys Ile Arg Met Asp Ile			
545	550	555	560
Asp Asn Val Glu Arg Thr Asn Lys Ile Lys Asp Gly Tyr Trp Asp Pro			
	565	570	575
Gly Pro Arg Ala Asp Pro Phe Glu Asp Met Trp Tyr Val Trp Gly Gly			
	580	585	590
Phe Ala Tyr Leu Gln Asp Val Val Glu Gln Ala Ile Ile Arg Val Leu			
595	600	605	
Thr Gly Thr Glu Lys Lys Thr Gly Val Tyr Met Gln Gln Met Pro Tyr			
610	615	620	
Pro Cys Tyr Val Asp Asp Ile Phe Leu Arg Val Met Ser Arg Ser Met			
625	630	635	640
Pro Leu Phe Met Thr Leu Ala Trp Ile Tyr Ser Val Ala Val Ile Ile			
	645	650	655
Lys Gly Ile Val Tyr Glu Lys Glu Ala Arg Leu Lys Glu Thr Met Arg			
	660	665	670
Ile Met Gly Leu Asp Asn Ser Ile Leu Trp Phe Ser Trp Phe Ile Ser			
675	680	685	
Ser Leu Ile Pro Leu Leu Val Ser Ala Gly Leu Leu Val Val Ile Leu			
690	695	700	
Lys Leu Gly Asn Leu Leu Pro Tyr Ser Asp Pro Ser Val Val Phe Val			
705	710	715	720
Phe Leu Ser Val Phe Ala Val Val Thr Ile Leu Gln Cys Phe Leu Ile			
	725	730	735
Ser Thr Leu Phe Ser Arg Ala Asn Leu Ala Ala Ala Cys Gly Gly Ile			
	740	745	750
Ile Tyr Phe Thr Leu Tyr Leu Pro Tyr Val Leu Cys Val Ala Trp Gln			
755	760	765	

Asp Tyr Val Gly Phe Thr Leu Lys Ile Phe Ala Ser Leu Leu Ser Pro			
770	775	780	
Val Ala Phe Gly Phe Gly Cys Glu Tyr Phe Ala Leu Phe Glu Glu Gln			
785	790	795	800
Gly Ile Gly Val Gln Trp Asp Asn Leu Phe Glu Ser Pro Val Glu Glu			
	805	810	815
Asp Gly Phe Asn Leu Thr Thr Ser Ile Ser Met Met Leu Phe Asp Thr			
	820	825	830
Phe Leu Tyr Gly Val Met Thr Trp Tyr Ile Glu Ala Val Phe Pro Gly			
	835	840	845
Gln Tyr Gly Ile Pro Arg Pro Trp Tyr Phe Pro Cys Thr Lys Ser Tyr			
	850	855	860
Trp Phe Gly Glu Glu Ser Asp Glu Lys Ser His Pro Gly Ser Asn Gln			
	865	870	875
			880
Lys Arg Met Ser Glu Ile Cys Met Glu Glu Glu Pro Thr His Leu Lys			
	885	890	895
Leu Gly Val Ser Ile Gln Asn Leu Val Lys Val Tyr Arg Asp Gly Met			
	900	905	910
Lys Val Ala Val Asp Gly Leu Ala Leu Asn Phe Tyr Glu Gly Gln Ile			
	915	920	925
Thr Ser Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser			
	930	935	940
Ile Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Thr Ala Tyr Ile Leu			
	945	950	955
			960
Gly Lys Asp Ile Arg Ser Glu Met Ser Thr Ile Arg Gln Asn Leu Gly			
	965	970	975
Val Cys Pro Gln His Asn Val Leu Phe Asp Met Leu Thr Val Glu Glu			
	980	985	990
His Ile Trp Phe Tyr Ala Arg Leu Lys Gly Leu Ser Glu Lys His Val			
	995	1000	1005
Lys Ala Glu Met Glu Gln Met Ala Leu Asp Val Gly Leu Pro Ser Ser			
	1010	1015	1020

Lys Leu Lys Ser Lys Thr Ser Gln Leu Ser Gly Gly Met Gln Arg Lys			
1025	1030	1035	1040
Leu Ser Val Ala Leu Ala Phe Val Gly Gly Ser Lys Val Val Ile Leu			
1045	1050	1055	
Asp Glu Pro Thr Ala Gly Val Asp Pro Tyr Ser Arg Arg Gly Ile Trp			
1060	1065	1070	
Glu Leu Leu Leu Lys Tyr Arg Gln Gly Arg Thr Ile Ile Leu Ser Thr			
1075	1080	1085	
His His Met Asp Glu Ala Asp Val Leu Gly Asp Arg Ile Ala Ile Ile			
1090	1095	1100	
Ser His Gly Lys Leu Cys Cys Val Gly Ser Ser Leu Phe Leu Lys Asn			
1105	1110	1115	1120
Gln Leu Gly Thr Gly Tyr Tyr Leu Thr Leu Val Lys Lys Asp Val Glu			
1125	1130	1135	
Ser Ser Leu Ser Ser Cys Arg Asn Ser Ser Ser Thr Val Ser Tyr Leu			
1140	1145	1150	
Lys Lys Glu Asp Ser Val Ser Gln Ser Ser Ser Asp Ala Gly Leu Gly			
1155	1160	1165	
Ser Asp His Glu Ser Asp Thr Leu Thr Ile Asp Val Ser Ala Ile Ser			
1170	1175	1180	
Asn Leu Ile Arg Lys His Val Ser Glu Ala Arg Leu Val Glu Asp Ile			
1185	1190	1195	1200
Gly His Glu Leu Thr Tyr Val Leu Pro Tyr Glu Ala Ala Lys Glu Gly			
1205	1210	1215	
Ala Phe Val Glu Leu Phe His Glu Ile Asp Asp Arg Leu Ser Asp Leu			
1220	1225	1230	
Gly Ile Ser Ser Tyr Gly Ile Ser Glu Thr Thr Leu Glu Glu Ile Phe			
1235	1240	1245	
Leu Lys Val Ala Glu Glu Ser Gly Val Asp Ala Glu Thr Ser Asp Gly			
1250	1255	1260	
Thr Leu Pro Ala Arg Arg Asn Arg Arg Ala Phe Gly Asp Lys Gln Ser			
1265	1270	1275	1280

Cys Leu Arg Pro Phe Thr Glu Asp Asp Ala Ala Asp Pro Asn Asp Ser			
1285	1290	1295	
Asp Ile Asp Pro Glu Ser Arg Glu Thr Asp Leu Leu Ser Gly Met Asp			
1300	1305	1310	
Gly Lys Gly Ser Tyr Gln Val Lys Gly Trp Lys Leu Thr Gln Gln Gln			
1315	1320	1325	
Phe Val Ala Leu Leu Trp Lys Arg Leu Leu Ile Ala Arg Arg Ser Arg			
1330	1335	1340	
Lys Gly Phe Phe Ala Gln Ile Val Leu Pro Ala Val Phe Val Cys Ile			
1345	1350	1355	1360
Ala Leu Val Phe Ser Leu Ile Val Pro Pro Phe Gly Lys Tyr Pro Ser			
1365	1370	1375	
Leu Glu Leu Gln Pro Trp Met Tyr Asn Glu Gln Tyr Thr Phe Val Ser			
1380	1385	1390	
Asn Asp Ala Pro Glu Asp Thr Gly Thr Leu Glu Leu Leu Asn Ala Leu			
1395	1400	1405	
Thr Lys Asp Pro Gly Phe Gly Thr Arg Cys Met Glu Gly Asn Pro Ile			
1410	1415	1420	
Pro Asp Thr Pro Cys Gln Ala Gly Glu Glu Glu Trp Thr Thr Ala Pro			
1425	1430	1435	1440
Val Pro Gln Thr Ile Met Asp Leu Phe Gln Asn Gly Asn Trp Thr Met			
1445	1450	1455	
Gln Asn Pro Ser Pro Ala Cys Gln Cys Ser Ser Asp Lys Ile Lys Lys			
1460	1465	1470	
Met Leu Pro Val Cys Pro Pro Gly Ala Gly Gly Leu Pro Pro Pro Gln			
1475	1480	1485	
Arg Lys Gln Asn Thr Ala Asp Ile Leu Gln Asp Leu Thr Gly Arg Asn			
1490	1495	1500	
Ile Ser Asp Tyr Leu Val Lys Thr Tyr Val Gln Ile Ile Ala Lys Ser			
1505	1510	1515	1520
Leu Lys Asn Lys Ile Trp Val Asn Glu Phe Arg Tyr Gly Gly Phe Ser			
1525	1530	1535	

Leu Gly Val Ser Asn Thr Gln Ala Leu Pro Pro Ser Gln Glu Val Asn
 1540 1545 1550
 Asp Ala Ile Lys Gln Met Lys Lys His Leu Lys Leu Ala Lys Asp Ser
 1555 1560 1565
 Ser Ala Asp Arg Phe Leu Asn Ser Leu Gly Arg Phe Met Thr Gly Leu
 1570 1575 1580
 Asp Thr Arg Asn Asn Val Lys Val Trp Phe Asn Asn Lys Gly Trp His
 1585 1590 1595 1600
 Ala Ile Ser Ser Phe Leu Asn Val Ile Asn Asn Ala Ile Leu Arg Ala
 1605 1610 1615
 Asn Leu Gln Lys Gly Glu Asn Pro Ser His Tyr Gly Ile Thr Ala Phe
 1620 1625 1630
 Asn His Pro Leu Asn Leu Thr Lys Gln Gln Leu Ser Glu Val Ala Leu
 1635 1640 1645
 Met Thr Thr Ser Val Asp Val Leu Val Ser Ile Cys Val Ile Phe Ala
 1650 1655 1660
 Met Ser Phe Val Pro Ala Ser Phe Val Val Phe Leu Ile Gln Glu Arg
 1665 1670 1675 1680
 Val Ser Lys Ala Lys His Leu Gln Phe Ile Ser Gly Val Lys Pro Val
 1685 1690 1695
 Ile Tyr Trp Leu Ser Asn Phe Val Trp Asp Met Cys Asn Tyr Val Val
 1700 1705 1710
 Pro Ala Thr Leu Val Ile Ile Ile Phe Ile Cys Phe Gln Gln Lys Ser
 1715 1720 1725
 Tyr Val Ser Ser Thr Asn Leu Pro Val Leu Ala Leu Leu Leu Leu
 1730 1735 1740
 Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe Val Phe
 1745 1750 1755 1760
 Lys Ile Pro Ser Thr Ala Tyr Val Val Leu Thr Ser Val Asn Leu Phe
 1765 1770 1775
 Ile Gly Ile Asn Gly Ser Val Ala Thr Phe Val Leu Glu Leu Phe Thr
 1780 1785 1790

Asp Asn Lys Leu Asn Asn Ile Asn Asp Ile Leu Lys Ser Val Phe Leu
1795 1800 1805

Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile Asp Met Val Lys
1810 1815 1820

Asn Gln Ala Met Ala Asp Ala Leu Glu Arg Phe Gly Glu Asn Arg Phe
1825 1830 1835 1840

Val Ser Pro Leu Ser Trp Asp Leu Val Gly Arg Asn Leu Phe Ala Met
1845 1850 1855

Ala Val Glu Gly Val Val Phe Phe Leu Ile Thr Val Leu Ile Gln Tyr
1860 1865 1870

Arg Phe Phe Ile Arg Pro Arg Pro Val Asn Ala Lys Leu Ser Pro Leu
1875 1880 1885

Asn Asp Glu Asp Glu Asp Val Arg Arg Glu Arg Gln Arg Ile Leu Asp
1890 1895 1900

Gly Gly Gly Gln Asn Asp Ile Leu Glu Ile Lys Glu Leu Thr Lys Ile
1905 1910 1915 1920

Tyr Arg Arg Lys Arg Lys Pro Ala Val Asp Arg Ile Cys Val Gly Ile
1925 1930 1935

Pro Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys
1940 1945 1950

Ser Ser Thr Phe Lys Met Leu Thr Gly Asp Thr Thr Val Thr Arg Gly
1955 1960 1965

Asp Ala Phe Leu Asn Lys Asn Ser Ile Leu Ser Asn Ile His Glu Val
1970 1975 1980

His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala Ile Thr Glu Leu
1985 1990 1995 2000

Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu Leu Arg Gly Val
2005 2010 2015

Pro Glu Lys Glu Val Gly Lys Val Gly Glu Trp Ala Ile Arg Lys Leu
2020 2025 2030

Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Gly Asn Tyr Ser Gly Gly
2035 2040 2045

Asn Lys Arg Lys Leu Ser Thr Ala Met Ala Leu Ile Gly Gly Pro Pro			
2050	2055	2060	
Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg			
2065	2070	2075	2080
Arg Phe Leu Trp Asn Cys Ala Leu Ser Val Val Lys Glu Gly Arg Ser			
2085	2090	2095	
Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr			
2100	2105	2110	
Arg Met Ala Ile Met Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Val			
2115	2120	2125	
Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Thr Ile Val Val Arg			
2130	2135	2140	
Ile Ala Gly Ser Asn Pro Asp Leu Lys Pro Val Gln Asp Phe Phe Gly			
2145	2150	2155	2160
Leu Ala Phe Pro Gly Ser Val Leu Lys Glu Lys His Arg Asn Met Leu			
2165	2170	2175	
Gln Tyr Gln Leu Pro Ser Ser Leu Ser Ser Leu Ala Arg Ile Phe Ser			
2180	2185	2190	
Ile Leu Ser Gln Ser Lys Lys Arg Leu His Ile Glu Asp Tyr Ser Val			
2195	2200	2205	
Ser Gln Thr Thr Leu Asp Gln Val Phe Val Asn Phe Ala Lys Asp Gln			
2210	2215	2220	
Ser Asp Asp Asp His Leu Lys Asp Leu Ser Leu His Lys Asn Gln Thr			
2225	2230	2235	2240
Val Val Asp Val Ala Val Leu Thr Ser Phe Leu Gln Asp Glu Lys Val			
2245	2250	2255	
Lys Glu Ser Tyr Val			
2260			

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<211> 24

<212> DNA

<213> Artificial Sequence

<220>
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 amplification primer

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<210> 12
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<220>
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<210> 13
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<220>
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 primer

<400> 13
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<210> 14
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<220>
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<400> 14
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<210> 15
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<400> 15
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<210> 16
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<400> 16
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<210> 17
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<400> 17
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<210> 18
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<400> 18
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<210> 19
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<210> 20
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<220>
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<400> 20
 agtgacatgc gacaggag 18

<210> 21
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 <212> DNA
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<400> 21
 gatctggaag gcatgtgg 18

<210> 22
 <211> 18
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<400> 22
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<210> 23
 <211> 18
 <212> DNA
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<220>

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<400> 23

ggcctggaca acagcata

18

<210> 24

<211> 19

<212> DNA

<213> Artificial Sequence

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<400> 24

ggacaacctg ttgagagt

19

<210> 25

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<212> DNA

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<223> Description of Artificial Sequence: ABC1
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aagacgacca ccatgtca

18

<210> 26

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: ABC1
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<400> 26

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<210> 27

<211> 24

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: ABC1
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24

<210> 28

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<212> DNA

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<223> Description of Artificial Sequence: ABC1
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aagagactgc taattgcc

18

<210> 29

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<213> Artificial Sequence

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<400> 29

agcgacaaaa tcaagaag

18

<210> 30

<211> 18

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<400> 30

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18

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<212> DNA

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<223> Description of Artificial Sequence: ABC1
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<400> 31

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<211> 18

<212> DNA

<213> Artificial Sequence

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<400> 32

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18

<210> 33

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<212> DNA

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gatgccatca cagagctg

18

<210> 34

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<213> Artificial Sequence

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sequencing primer

<400> 34

agtgtccagc atctaaa

17

<210> 35

<211> 18

<212> DNA

<213> Artificial Sequence

<220>
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<400> 35
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<210> 36
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sequencing primer

<400> 36
cttagggcac aattccaca 19

<210> 37
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sequencing primer

<400> 37
tgaaagttga tgattttc 18

<210> 38
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sequencing primer

<400> 38
tttttcacca tgtcgatga 19

<210> 39
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<220>
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 sequencing primer

<400> 39
 ctccactgat gaactgc 17

<210> 40
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 sequencing primer

<400> 40
 gttttcttcat ttgtttga 18

<210> 41
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<220>
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 sequencing primer

<400> 41
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<210> 42
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<220>
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 sequencing primer

<400> 42
 cagaatcatt tggatcag 18

<210> 43
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 <212> DNA
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<220>

<223> Description of Artificial Sequence: ABC1
sequencing primer

<400> 43

catcagaact gctctgag

18

<210> 44

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: ABC1
sequencing primer

<400> 44

agctggcttg ttttgcttt

19

<210> 45

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: ABC1
sequencing primer

<400> 45

tggacacgcc cagcttca

18

<210> 46

<211> 18

<212> DNA

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<223> Description of Artificial Sequence: ABC1
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18

<210> 47

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 sequencing primer

<400> 47
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<210> 49
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 sequencing primer

<400> 49
 tccagataat gcgggaaa 18

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 sequencing primer

<400> 50
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sequencing primer

<400> 51

aagtttgagc tggatttctt g

21

<210> 52

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: beta-globin
antisense oligonucleotide

<400> 52

cctcttacct cagttacaat ttata

25

<210> 53

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: ABC1 antisense
oligonucleotide

<400> 53

catgttggtc atagggtggg tagctc

26

<210> 54

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: beta-actin
amplification primer

<400> 54

tcaccacac tgtgccatct acga

24

<210> 55

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: beta-actin
amplification primer

<400> 55

cagcgggaacc gctcattgcc aatgg

25

<210> 56

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: sterol
response element oligonucleotide

<400> 56

tcgagtgcacc gatagtaacc tctcga

26

<210> 57

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: mutated sterol
response element oligonucleotide

<400> 57

tcgagctgca catagtaacc tctcga

26